

# Sandilands Primary School

Installation : External Lighting Calcs

Project number : PA1681

Customer : Tilbury Douglas

Processed by : Samuel Mathieson

Date : 10.05.2023

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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## 1 Luminaire data

### 1.1 Whitecroft Lighting, SIROCCO MIDI - AREA OPTIC (SIMDH14KGA)

#### 1.1.1 Data sheet

Manufacturer: Whitecroft Lighting



#### **SIMDH14KGA Wall / pole mounted luminaire SIROCCO MIDI - AREA OPTIC**

IP66 LED post top luminaire with lightweight die cast aluminium body. High efficacy performance with a choice of road and area lighting distribution patterns and zero upward light when mounted horizontally. Electronic control gear with voltage surge protection and isolating safety switch – as Whitecroft Lighting SIROCCO MIDI.

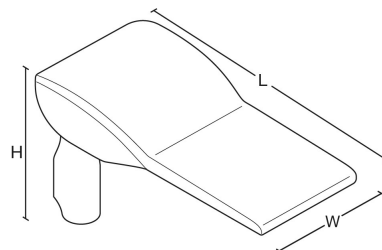
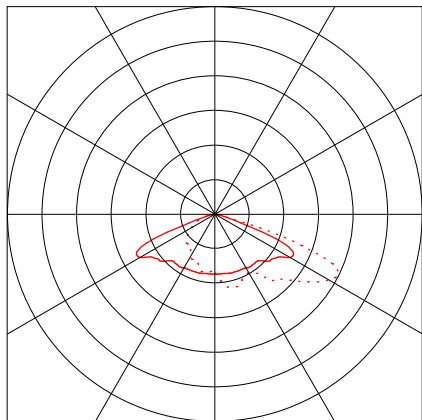
#### **Luminaire data**

Absolute Photometry  
 Luminaire efficacy : 138.52 lm/W  
 Classification : A30 ↓100.0% ↑0.0%  
 CIE Flux Codes : 29 64 97 100 100  
 Glare : G\*3 / D5  
 Control gear : electronic ballast  
 Power : 33 W  
 Luminous flux : 4571 lm

#### **Equipped with**

Quantity : 1  
 Designation : LED  
 Colour : 4000K  
 Colour reproduction : 80

Dimensions : 558 mm x 293 mm x 115 mm



# 1 Luminaire data

## 1.2 Whitecroft Lighting, SPECTRE WX (SPXAH13K)

### 1.2.1 Data sheet

**Manufacturer: Whitecroft Lighting**



**SPXAH13K wall-mounted luminaire SPECTRE WX**  
**SPECTRE WX**

IP65 wall mounted LED semi-conical luminaire with forward throw. Die cast aluminium body with thermal shock resistant clear tempered glass. Includes first fix wall mounting bracket.

Emergency Lumens:- 704lm

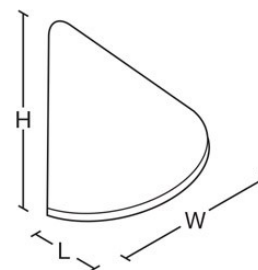
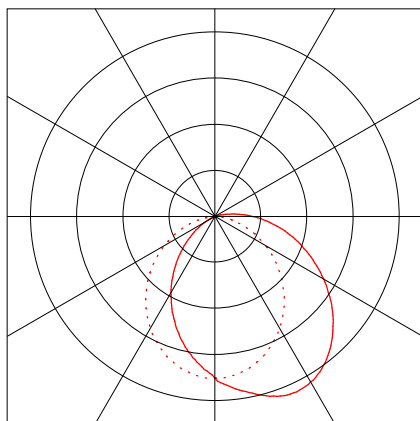
#### Luminaire data

Absolute Photometry  
 Luminaire efficacy : 111.87 lm/W  
 Classification : A40 ↓98.1% ↑1.9%  
 CIE Flux Codes : 47 77 93 98 100  
 UGR 4H 8H : 30.3 / 23.6  
 Control gear : electronic ballast  
 Power : 9 W  
 Luminous flux : 1006.8 lm

#### Equipped with

Quantity : 1  
 Designation : LED  
 Colour : 3000K  
 Colour reproduction : 80

Dimensions : 375 mm x 224 mm x 329 mm



#### Emergency Lighting

Light source from normal operation with reduced flux  
 Luminous flux : 704 lm

## 2 Exterior 1

### 2.1 Description, Exterior 1

#### 2.1.1 Floor plan



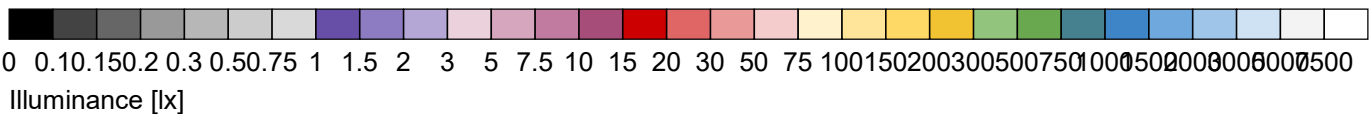
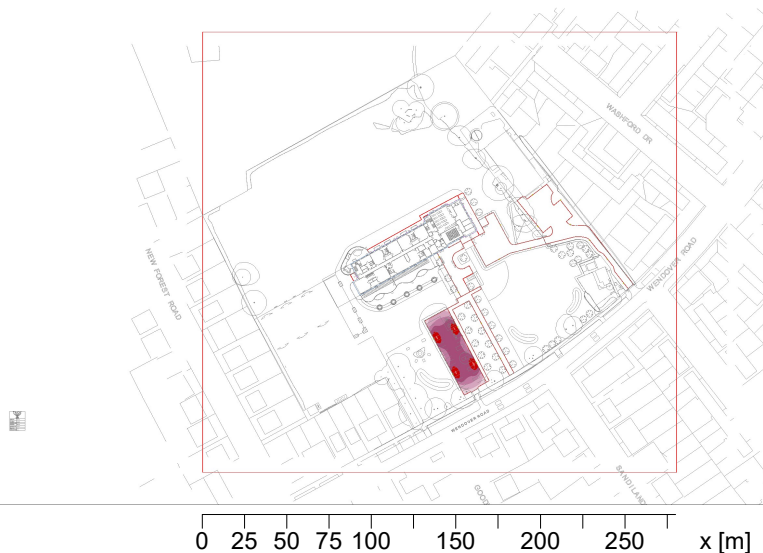
Object : Sandilands Primary School  
 Installation : External Lighting Calcs  
 Project number : PA1681  
 Date : 10.05.2023

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## 2 Exterior 1

### 2.2 Summary, Exterior 1

#### 2.2.1 Result overview, Car Park



#### General

|                                    |                           |
|------------------------------------|---------------------------|
| Calculation algorithm used         | Average indirect fraction |
| Height of evaluation surface       | 0.00 m                    |
| Maintenance factor                 | 0.80                      |
| Total luminous flux                | 100404 lm                 |
| Total power                        | 756 W                     |
| Total power per area (72800.00 m²) | 0.01 W/m²                 |

#### Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 10.9 lx       |
| Minimum illuminance | $E_{min}$           | 3.1 lx        |
| Maximum illuminance | $E_{max}$           | 21 lx         |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:3.56 (0.28) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:6.86 (0.15) |

#### Type No. Make

|                                                                                     |                |                          |
|-------------------------------------------------------------------------------------|----------------|--------------------------|
| 2 7 x                                                                               | Order No.      | :                        |
|  | Luminaire name | : Sirocco MIDI           |
|                                                                                     | with           | : 1 x SIMDH14KGA         |
|                                                                                     | Equipment      | : 1 x LED 33 W / 4571 lm |

#### Whitecroft Lighting

|                                                                                     |                |                         |
|-------------------------------------------------------------------------------------|----------------|-------------------------|
| 3 18 x                                                                              | Order No.      | : SPXAH13K              |
|  | Luminaire name | : SPECTRE WX            |
|                                                                                     | Equipment      | : 1 x LED 9 W / 1007 lm |
|                                                                                     | Emergency      | : 704 lm (69.9 %)       |

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2 Exterior 1

### 2.2 Summary, Exterior 1

#### 2.2.1 Result overview, Car Park

4 11 x



Order No. :  
Luminaire name : Sirocco MIDI  
with : 1 x SIMDH14KGA  
Equipment : 1 x LED 33 W / 4571 lm

Object : Sandilands Primary School  
 Installation : External Lighting Calcs  
 Project number : PA1681  
 Date : 10.05.2023

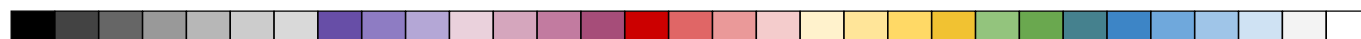


## 2.2 Summary, Exterior 1

### 2.2.2 Result overview, Pedestrian Walkway Entrance



0 25 50 75 100 150 200 250 x [m]



0 0.10.150.2 0.3 0.50.75 1 1.5 2 3 5 7.5 10 15 20 30 50 75 10015020030050075010005000000000500

Illuminance [lx]

#### General

|                              |                           |
|------------------------------|---------------------------|
| Calculation algorithm used   | Average indirect fraction |
| Height of evaluation surface | 0.00 m                    |
| Maintenance factor           | 0.80                      |

|                                                 |                       |
|-------------------------------------------------|-----------------------|
| Total luminous flux                             | 100404 lm             |
| Total power                                     | 756 W                 |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup> |

#### Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 9 lx          |
| Minimum illuminance | $E_{min}$           | 2.2 lx        |
| Maximum illuminance | $E_{max}$           | 19.7 lx       |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:4.06 (0.25) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:8.87 (0.11) |

#### Type No. Make

|                                                                                     |                |                          |
|-------------------------------------------------------------------------------------|----------------|--------------------------|
| 2 7 x                                                                               | Order No.      | :                        |
|  | Luminaire name | : Sirocco MIDI           |
|                                                                                     | with           | : 1 x SIMDH14KGA         |
|                                                                                     | Equipment      | : 1 x LED 33 W / 4571 lm |

#### Whitecroft Lighting

|                                                                                     |                |                         |
|-------------------------------------------------------------------------------------|----------------|-------------------------|
| 3 18 x                                                                              | Order No.      | : SPXAH13K              |
|  | Luminaire name | : SPECTRE WX            |
|                                                                                     | Equipment      | : 1 x LED 9 W / 1007 lm |
|                                                                                     | Emergency      | : 704 lm (69.9 %)       |

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.2 Result overview, Pedestrian Walkway Entrance

4 11 x



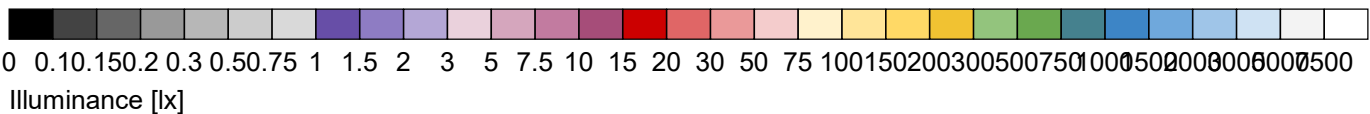
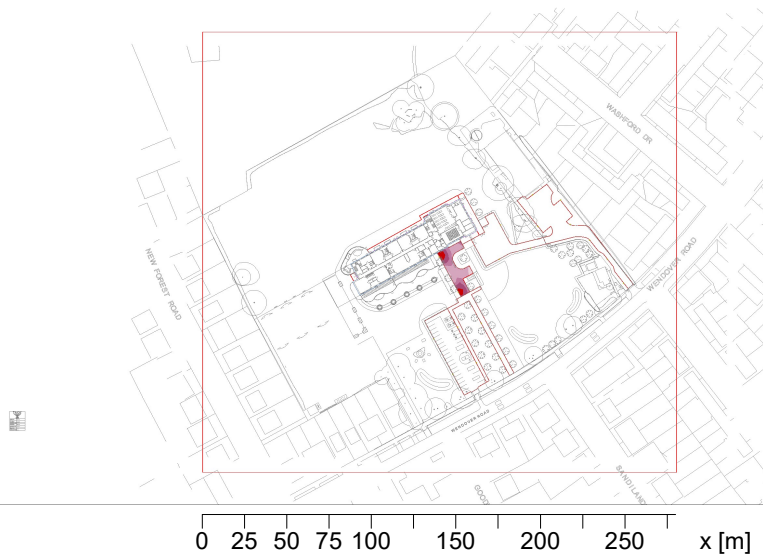
Order No. :  
Luminaire name : Sirocco MIDI  
with : 1 x SIMDH14KGA  
Equipment : 1 x LED 33 W / 4571 lm

Object : Sandilands Primary School  
 Installation : External Lighting Calcs  
 Project number : PA1681  
 Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.3 Result overview, Main Entrance



#### General

|                                                 |                           |
|-------------------------------------------------|---------------------------|
| Calculation algorithm used                      | Average indirect fraction |
| Height of evaluation surface                    | 0.00 m                    |
| Maintenance factor                              | 0.80                      |
| Total luminous flux                             | 100404 lm                 |
| Total power                                     | 756 W                     |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup>     |

#### Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 8.7 lx        |
| Minimum illuminance | $E_{min}$           | 4.3 lx        |
| Maximum illuminance | $E_{max}$           | 18.8 lx       |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:2.03 (0.49) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:4.36 (0.23) |

#### Type No. Make

|                                                                                     |                                    |
|-------------------------------------------------------------------------------------|------------------------------------|
| 2 7 x                                                                               | Order No. :                        |
|  | Luminaire name : Sirocco MIDI      |
|                                                                                     | with : 1 x SIMDH14KGA              |
|                                                                                     | Equipment : 1 x LED 33 W / 4571 lm |

#### Whitecroft Lighting

|                                                                                     |                                   |
|-------------------------------------------------------------------------------------|-----------------------------------|
| 3 18 x                                                                              | Order No. :                       |
|  | Luminaire name : SPECTRE WX       |
|                                                                                     | Equipment : 1 x LED 9 W / 1007 lm |
|                                                                                     | Emergency : 704 lm (69.9 %)       |

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.3 Result overview, Main Entrance

4 11 x



Order No. :  
Luminaire name : Sirocco MIDI  
with : 1 x SIMDH14KGA  
Equipment : 1 x LED 33 W / 4571 lm

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Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.4 Result overview, Building Perimeter East

|                                                                                   |      |                |   |                        |
|-----------------------------------------------------------------------------------|------|----------------|---|------------------------|
| 4                                                                                 | 11 x | Order No.      | : |                        |
|  |      | Luminaire name | : | Sirocco MIDI           |
|                                                                                   |      | with           | : | 1 x SIMDH14KGA         |
|                                                                                   |      | Equipment      | : | 1 x LED 33 W / 4571 lm |

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Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



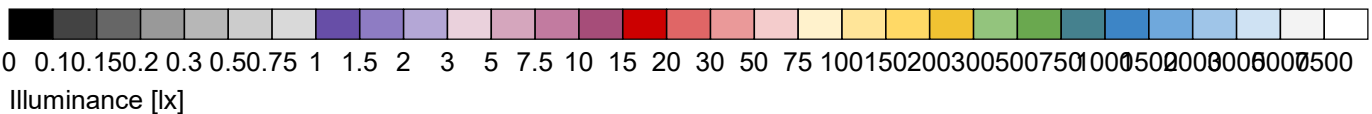
## 2.2 Summary, Exterior 1

### 2.2.5 Result overview, Building Perimeter South

|                                                                                   |      |                |   |                        |
|-----------------------------------------------------------------------------------|------|----------------|---|------------------------|
| 4                                                                                 | 11 x | Order No.      | : |                        |
|  |      | Luminaire name | : | Sirocco MIDI           |
|                                                                                   |      | with           | : | 1 x SIMDH14KGA         |
|                                                                                   |      | Equipment      | : | 1 x LED 33 W / 4571 lm |

## 2.2 Summary, Exterior 1

### 2.2.6 Result overview, Building Perimeter North



## General

|                              |                           |
|------------------------------|---------------------------|
| Calculation algorithm used   | Average indirect fraction |
| Height of evaluation surface | 0.00 m                    |
| Maintenance factor           | 0.80                      |

|                                                 |                       |
|-------------------------------------------------|-----------------------|
| Total luminous flux                             | 100404 lm             |
| Total power                                     | 756 W                 |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup> |

## Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 19.7 lx       |
| Minimum illuminance | $E_{min}$           | 5.2 lx        |
| Maximum illuminance | $E_{max}$           | 47.4 lx       |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:3.77 (0.27) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:9.07 (0.11) |

## Type No.\Make

2 7 x

Order No. :

Luminaire name : Sirocco MIDI

with : 1 x SIMDH14KGA

Equipment : 1 x LED 33 W / 4571 lm

## Whitecroft Lighting

3 18 x  
 Order No. : SPXAH13K  
 Luminaire name : SPECTRE WX  
 Equipment : 1 x LED 9 W / 1007 lm  
 Emergency : 704 lm (69.9 %)

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



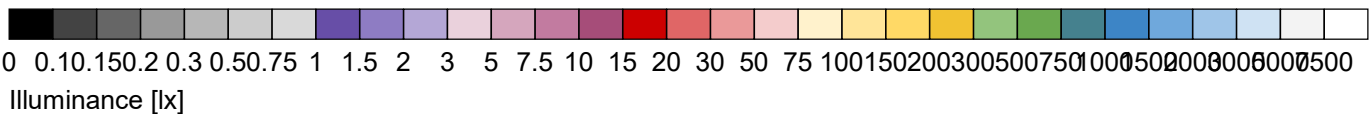
## 2.2 Summary, Exterior 1

### 2.2.6 Result overview, Building Perimeter North

|                                                                                   |      |                |   |                        |
|-----------------------------------------------------------------------------------|------|----------------|---|------------------------|
| 4                                                                                 | 11 x | Order No.      | : |                        |
|  |      | Luminaire name | : | Sirocco MIDI           |
|                                                                                   |      | with           | : | 1 x SIMDH14KGA         |
|                                                                                   |      | Equipment      | : | 1 x LED 33 W / 4571 lm |

## 2.2 Summary, Exterior 1

### 2.2.7 Result overview, Building Perimeter West



## General

|                              |                           |
|------------------------------|---------------------------|
| Calculation algorithm used   | Average indirect fraction |
| Height of evaluation surface | 0.00 m                    |
| Maintenance factor           | 0.80                      |

|                                                 |                       |
|-------------------------------------------------|-----------------------|
| Total luminous flux                             | 100404 lm             |
| Total power                                     | 756 W                 |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup> |

## Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 18.6 lx       |
| Minimum illuminance | $E_{min}$           | 8.9 lx        |
| Maximum illuminance | $E_{max}$           | 27 lx         |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:2.09 (0.48) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:3.04 (0.33) |

## Type No.\Make

|                                                                                     |     |                |   |                        |
|-------------------------------------------------------------------------------------|-----|----------------|---|------------------------|
| 2                                                                                   | 7 x | Order No.      | : |                        |
|  |     | Luminaire name | : | Sirocco MIDI           |
|                                                                                     |     | with           | : | 1 x SIMDH14KGA         |
|                                                                                     |     | Equipment      | : | 1 x LED 33 W / 4571 lm |

## Whitecroft Lighting

|   |      |                |                         |
|---|------|----------------|-------------------------|
| 3 | 18 x | Order No.      | : SPXAH13K              |
|   |      | Luminaire name | : SPECTRE WX            |
|   |      | Equipment      | : 1 x LED 9 W / 1007 lm |
|   |      | Emergency      | : 704 lm (69.9 %)       |

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.7 Result overview, Building Perimeter West

|                                                                                   |      |                |   |                        |
|-----------------------------------------------------------------------------------|------|----------------|---|------------------------|
| 4                                                                                 | 11 x | Order No.      | : |                        |
|  |      | Luminaire name | : | Sirocco MIDI           |
|                                                                                   |      | with           | : | 1 x SIMDH14KGA         |
|                                                                                   |      | Equipment      | : | 1 x LED 33 W / 4571 lm |

Object : Sandilands Primary School  
 Installation : External Lighting Calcs  
 Project number : PA1681  
 Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.8 Result overview, Vehicle Entrance



0 25 50 75 100 150 200 250 x [m]



0 0.10.150.2 0.3 0.50.75 1 1.5 2 3 5 7.5 10 15 20 30 50 75 10015020030050075010005000000000500  
 Illuminance [lx]

#### General

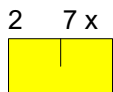
|                              |                           |
|------------------------------|---------------------------|
| Calculation algorithm used   | Average indirect fraction |
| Height of evaluation surface | 0.00 m                    |
| Maintenance factor           | 0.80                      |

|                                                 |                       |
|-------------------------------------------------|-----------------------|
| Total luminous flux                             | 100404 lm             |
| Total power                                     | 756 W                 |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup> |

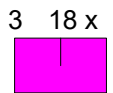
#### Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 13.4 lx       |
| Minimum illuminance | $E_{min}$           | 3.6 lx        |
| Maximum illuminance | $E_{max}$           | 24 lx         |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:3.7 (0.27)  |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:6.63 (0.15) |

#### Type No. Make



2 7 x  
 Order No. :  
 Luminaire name : Sirocco MIDI  
 with : 1 x SIMDH14KGA  
 Equipment : 1 x LED 33 W / 4571 lm



#### Whitecroft Lighting

3 18 x  
 Order No. : SPXAH13K  
 Luminaire name : SPECTRE WX  
 Equipment : 1 x LED 9 W / 1007 lm  
 Emergency : 704 lm (69.9 %)

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.8 Result overview, Vehicle Entrance

4 11 x



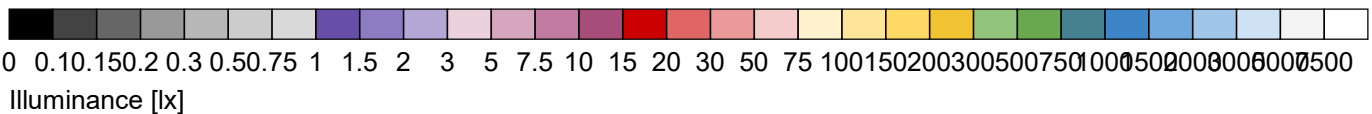
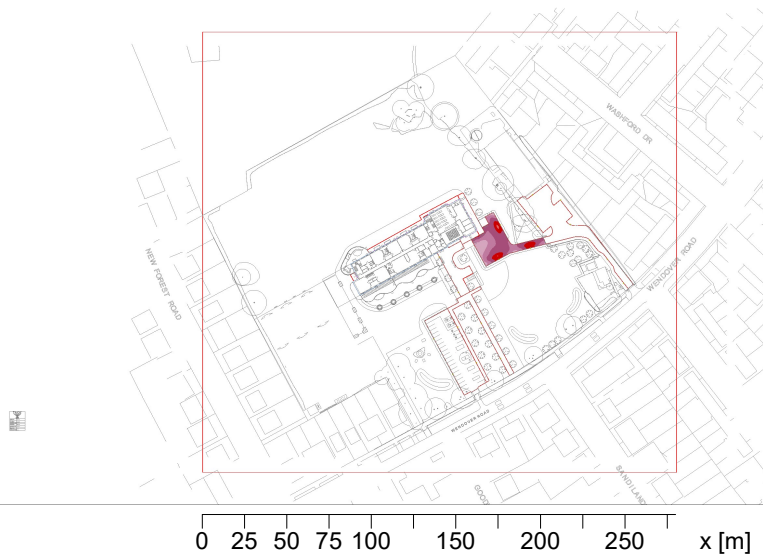
Order No. :  
Luminaire name : Sirocco MIDI  
with : 1 x SIMDH14KGA  
Equipment : 1 x LED 33 W / 4571 lm

Object : Sandilands Primary School  
 Installation : External Lighting Calcs  
 Project number : PA1681  
 Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.9 Result overview, Deliveries



#### General

|                                                 |                           |
|-------------------------------------------------|---------------------------|
| Calculation algorithm used                      | Average indirect fraction |
| Height of evaluation surface                    | 0.00 m                    |
| Maintenance factor                              | 0.80                      |
| Total luminous flux                             | 100404 lm                 |
| Total power                                     | 756 W                     |
| Total power per area (72800.00 m <sup>2</sup> ) | 0.01 W/m <sup>2</sup>     |

#### Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 11.1 lx       |
| Minimum illuminance | $E_{min}$           | 5.7 lx        |
| Maximum illuminance | $E_{max}$           | 21 lx         |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:1.93 (0.52) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:3.65 (0.27) |

#### Type No. Make

|                                                                                     |     |                |                          |
|-------------------------------------------------------------------------------------|-----|----------------|--------------------------|
| 2                                                                                   | 7 x | Order No.      | :                        |
|  |     | Luminaire name | : Sirocco MIDI           |
|                                                                                     |     | with           | : 1 x SIMDH14KGA         |
|                                                                                     |     | Equipment      | : 1 x LED 33 W / 4571 lm |

#### Whitecroft Lighting

|                                                                                     |      |                |                         |
|-------------------------------------------------------------------------------------|------|----------------|-------------------------|
| 3                                                                                   | 18 x | Order No.      | : SPXAH13K              |
|  |      | Luminaire name | : SPECTRE WX            |
|                                                                                     |      | Equipment      | : 1 x LED 9 W / 1007 lm |
|                                                                                     |      | Emergency      | : 704 lm (69.9 %)       |

Object : Sandilands Primary School  
Installation : External Lighting Calcs  
Project number : PA1681  
Date : 10.05.2023



## 2.2 Summary, Exterior 1

### 2.2.9 Result overview, Deliveries

|                                                                                   |      |                |   |                        |
|-----------------------------------------------------------------------------------|------|----------------|---|------------------------|
| 4                                                                                 | 11 x | Order No.      | : |                        |
|  |      | Luminaire name | : | Sirocco MIDI           |
|                                                                                   |      | with           | : | 1 x SIMDH14KGA         |
|                                                                                   |      | Equipment      | : | 1 x LED 33 W / 4571 lm |

## 2 Exterior 1

### 2.3 Calculation results, Exterior 1

#### 2.3.1 3D luminance, View 1

